AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Cancel claims 1-18.

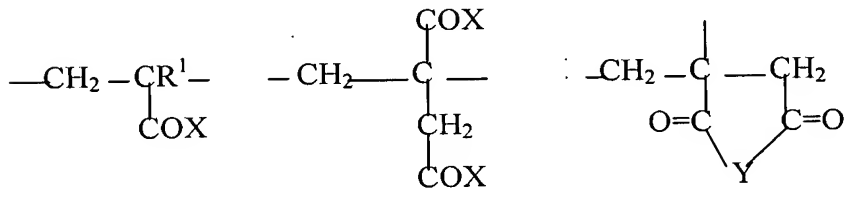
19. (New) A method of imparting flow to a cementitious composition, comprising the addition thereto of an admixture comprising:

(1) 2-phosphonobutane-1,2,4-tricarboxylic acid;

(2) optionally, citric acid or citric acid monohydrate; and

(3) at least one polymer derived from ethylenically-unsaturated mono-or dicarboxylic acids, and characterised in that the polymer comprises:

a) 51-95 mole % of moieties of formula 1a and/or 1b and/or 1c



Ia Ib Ic

wherein R^1 = hydrogen or a C_{1-20} aliphatic hydrocarbon residue;

X= O_a M, -O-$(C_m H_{2m} O)_n$-R^2, -NH-$(C_m H_{2m} O)_n$-R^2,

M = hydrogen, a mono-or divalent metal cation, an ammonium ion or an organic amine residue;

a=0.5 or 1;

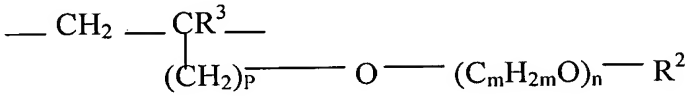
R^2 = hydrogen, C_{1-20} aliphatic hydrocarbon, C_{5-8} cycloaliphatic hydrocarbon or optionally substituted C_{6-14} aryl residue;

Y= O, NR^2;

m= 2-4; and

n= 0-200;

b) 1-48.9 mole% of moieties of the general formula II



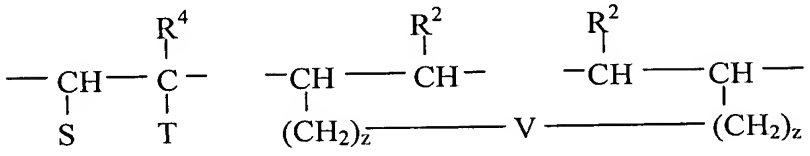
II

wherein R^3 = hydrogen or $C_{1\text{-}5}$ aliphatic hydrocarbon;

p = 0-3; and

R^2 has the meaning given previously;

c) 0.1-5 mole % of moieties of Formulae IIIa or IIIb



IIIa IIIb

wherein S = H, $-COO_aM$, $-COOR^5$

T = U^1-(CH-CH_2-O)$_x$- (CH_2-CH_2O)$_y$$R^6$

CH^3

-W-R^7

-CO-[NH-$(CH_2)_3$]$_s$-W-R^7

-CO-O-$(CH_2)_z$-W-R^7

-$(CH_2)_z$-V-$(CH_2)_z$-CH=CH-R^2

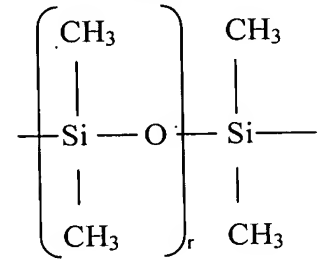
$-COOR^5$ when S is $-COOR^5$ or COO_a M

U^1 = -CO-NH-, -O-, - CH_2O-

U^2= - NH-CO-, -O-, $-OCH_2$-

V =-O-CO-C_6H_4-CO-O- or -W-

W =



R^4 = H, CH_3

R^5 = a C_{3-20} alphatic hydrocarbon residue, a C_5-C_8 cycloaliphatic hydrocarbon residue or a C_{6-14} aryl residue;

$R^6 = R^2$, $-CH_2-\underset{\underset{R^4}{|}}{CH}-U^2-\underset{\underset{R^4}{|}}{\overset{\overset{S}{|}}{C}}=CH$

$R^7 = R^2$, $-[(CH_2)_3-NH]_s-CO-\underset{\underset{R^4}{|}}{\overset{\overset{S}{|}}{C}}=CH$

$-(CH_2)_z-O-CO-\underset{\underset{R^4}{|}}{\overset{\overset{S}{|}}{C}}=CH$

wherein

r = 2-100

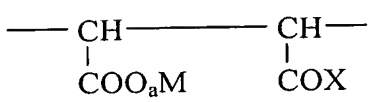
s = 1, 2

z = 0-4

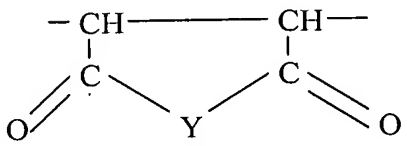
x = 1-150

y = 0-15; and

d) 0-47.9 mole % of moieties of the general formula IVa and / or IV b:



IVa



IVb

wherein a, M, X and Y have the meanings defined above.

20. (New) The method according to claim 19, in which:

a) the moiety is according to formula Ia;

R^1, R^2 are independently H or CH_3;

X= O_a M, -O-$(C_m H_{2m}O)_n$-R^2

M = H or a mono-or divalent metal cation;

a = 1;

Y= O, NR^2;

m= 2-3; and

n= 20-150;

b) R^2, R^3 are independently H or CH_3; and

p = 0-1; and

c) the moiety is according to formula IIIa;

S = H, -COO_aM, - $COOR^5$

T = U^1-$(CH(CH^3)-CH_2-O)_x$- $(CH_2-CH_2O)_yR^6$

-CO-[NH-$(CH_2)_3$]$_s$-W-R^7

-CO-O-$(CH_2)_z$-W-R^7

R^4, R^5 are independently H, CH_3;

R^6 = R^2, -CH_2-$CH(R^4)$-U^2-$C(R^4)$=$CH(S)$

R^7 = R^2, -[$(CH_2)_3$-NH]$_s$-CO-$C(R^4)$=$CH(S)$

-$(CH_2)_z$-O-CO-$C(R^4)$=$CH(S)$

wherein

U^1 = -CO-NH-, -O-, - CH_2O-

U^2= - NH-CO-, -O-, -OCH_2-

x = 20-50;

y = 1-10; and

z = 0-2.

21. (New) The method according to claim 20, in which:

a) the moiety is according to formula Ia;

$R^1 = H$;

$R^2 = CH_3$;

$X = O_a M$;

M = a mono-or divalent metal cation;

$Y = O, NR^2$;

m = 2; and

n = 25-50;

b) $R^2, R^3 = H$; and

p = 0; and

c) the moiety is according to formula IIIa;

$S = H, -COO_aM$;

$T = U^1\text{-}(CH(CH^3)\text{-}CH_2\text{-}O)_x\text{-}(CH_2\text{-}CH_2O)_yR^6$

$-CO\text{-}O\text{-}(CH_2)_z\text{-}W\text{-}R^7$

$R^4, R^5 = H$;

$R^6 = R^2, -CH_2\text{-}CH(R^4)\text{-}U^2\text{-}C(R^4)=CH(S)$

$R^7 = R^2, -[(CH_2)_3\text{-}NH]_s\text{-}CO\text{-}C(R^4)=CH(S)$

$-(CH_2)_z\text{-}O\text{-}CO\text{-}C(R^4)=CH(S)$

wherein

$U^1 = -CO\text{-}NH\text{-}$;

$U^2 = -NH\text{-}CO\text{-}, -O\text{-}, -OCH_2\text{-}$

x = 20-50;

y = 5-10; and

z = 1-2.

22. (New) The method of claim 19 wherein the polymer has a weight-average molecular weight of from about 5,000 to about 50,000.

23. (New) The method of claim 19 wherein the polymer has a weight-average molecular weight of from about 10,000 to about 40,000.

24. (New) The admixture of claim 19 wherein the proportions of the solids of the three components are:
Component 1 - about 1% to about 40%;
Component 2 – 0 to about 40%; and
Component 3 – about 5% to about 60%.

25. (New) The method of claim 19 wherein the admixture is added at a rate of from about 0.2% to about 2% by weight solids of cement.

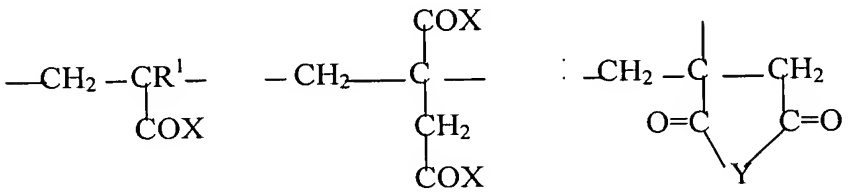
26. (New) A method of spraying a cementitious composition comprising preparing a cementitious mix and conveying the mix to a spray nozzle, there being added to the mix at preparation an admixture comprising:

(1) 2-phosphonobutane-1,2,4-tricarboxylic acid;

(2) optionally, citric acid or citric acid monohydrate; and

(3) at least one polymer derived from ethylenically-unsaturated mono-or dicarboxylic acids, and characterised in that the polymer comprises:

a) 51-95 mole % of moieties of formula 1a and/or 1b and/or 1c



Ia Ib Ic

wherein R^1 = hydrogen or a C_{1-20} aliphatic hydrocarbon residue;
X= O_a M, -O-$(C_m H_{2m}O)_n$-R^2, -NH-$(C_m H_{2m}O)_n$-R^2,

M = hydrogen, a mono-or divalent metal cation, an ammonium ion or an organic amine residue;

a=0.5 or 1;

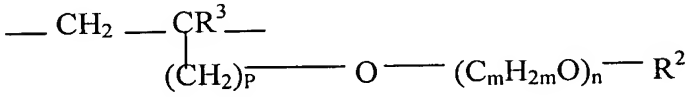
R^2 = hydrogen, C_{1-20} aliphatic hydrocarbon, C_{5-8} cycloaliphatic hydrocarbon or optionally substituted C_{6-14} aryl residue;

Y= O, NR^2;

m= 2-4; and

n= 0-200;

b) 1-48.9 mole% of moieties of the general formula II



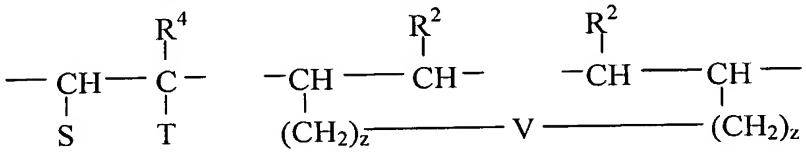
II

wherein R^3 = hydrogen or C_{1-5} aliphatic hydrocarbon;

p = 0-3; and

R^2 has the meaning given previously;

c) 0.1-5 mole % of moieties of Formulae IIIa or IIIb



IIIa IIIb

wherein S = H, $-COO_aM$, $-COOR^5$

T = U^1-$(CH(CH_3)-CH_2-O)_x$-$(CH_2-CH_2O)_yR^6$

-W-R^7

-CO-$[NH-(CH_2)_3]_s$-W-R^7

-CO-O-$(CH_2)_z$-W-R^7

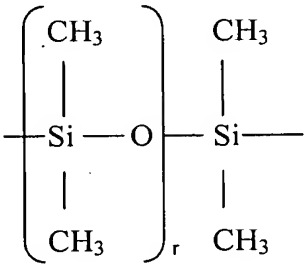
-$(CH_2)_z$-V-$(CH_2)_z$-CH=CH-R^2

$-COOR^5$ when S is $-COOR^5$ or COO_a M

U^1 = -CO-NH-, -O-, - CH_2O-

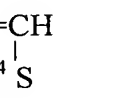
U^2= - NH-CO-, -O-, -OCH_2-

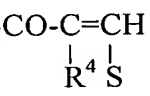
V =-O-CO-C_6H_4-CO-O- or -W-

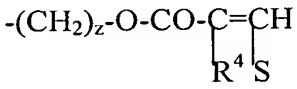
W = 

R^4 = H, CH_3

R^5 = a C_{3-20} alphatic hydrocarbon residue, a C_5-C_8 cycloaliphatic hydrocarbon residue or a C_{6-14} aryl residue;

$R^6 = R^2$, 

$R^7 = R^2$, 



wherein r = 2-100

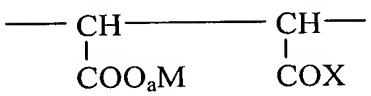
s = 1, 2

z = 0-4

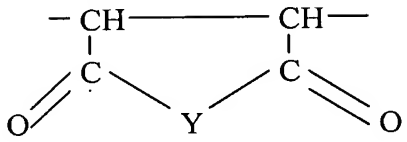
x = 1-150

y = 0-15; and

d) 0-47.9 mole % of moieties of the general formula IVa and / or IV b:



IVa



IVb

wherein a, M, X and Y have the meanings defined above.

27. (New) The method according to claim 26, in which:

a) the moiety is according to formula Ia;

R^1, R^2 are independently H or CH_3;

X= O_a M, -O-$(C_m H_{2m}O)_n$-R^2

M = H or a mono-or divalent metal cation;

a = 1;

Y= O, NR^2;

m= 2-3; and

n= 20-150;

b) R^2, R^3 are independently H or CH_3; and

p = 0-1; and

c) the moiety is according to formula IIIa;

S = H, -COO_aM, - $COOR^5$

T = U^1-$(CH(CH_3)-CH_2-O)_x$- $(CH_2-CH_2O)_yR^6$

-CO-[NH-$(CH_2)_3$]$_s$-W-R^7

-CO-O-$(CH_2)_z$-W-R^7

R^4, R^5 are independently H, CH_3;

R^6 = R^2, -CH_2-$CH(R^4)$-U^2-$C(R^4)$=$CH(S)$

R^7 = R^2, -[$(CH_2)_3$-NH]$_s$-CO-$C(R^4)$=$CH(S)$

-$(CH_2)_z$-O-CO-$C(R^4)$=$CH(S)$

wherein

U^1 = -CO-NH-, -O-, - CH_2O-

U^2= - NH-CO-, -O-, -OCH_2-

x = 20-50;

y = 1-10; and

z = 0-2.

28. (New) The method according to claim 27, in which:

a) the moiety is according to formula Ia;

$R^1 = H$;

$R^2 = CH_3$;

$X = O_a M$;

M = a mono-or divalent metal cation;

$Y = O, NR^2$;

m = 2; and

n = 25-50;

b) $R^2, R^3 = H$; and

p = 0; and

c) the moiety is according to formula IIIa;

$S = H, -COO_aM$;

$T = U^1\text{-}(CH(CH^3)\text{-}CH_2\text{-}O)_x\text{-}(CH_2\text{-}CH_2O)_yR^6$

$-CO\text{-}O\text{-}(CH_2)_z\text{-}W\text{-}R^7$

$R^4, R^5 = H$;

$R^6 = R^2, -CH_2\text{-}CH(R^4)\text{-}U^2\text{-}C(R^4)=CH(S)$

$R^7 = R^2, -[(CH_2)_3\text{-}NH]_s\text{-}CO\text{-}C(R^4)=CH(S)$

$-(CH_2)_z\text{-}O\text{-}CO\text{-}C(R^4)=CH(S)$

wherein

$U^1 = -CO\text{-}NH\text{-}$;

$U^2 = -NH\text{-}CO\text{-}, -O\text{-}, -OCH_2\text{-}$

x = 20-50;

y = 5-10; and

z = 1-2.

29. (New) The method of claim 26 wherein the polymer has a weight-average molecular weight of from about 5,000 to about 50,000.

30. (New) The method of claim 26 wherein the polymer has a weight-average molecular weight of from about 10,000 to about 40,000.

31. (New) The admixture of claim 26 wherein the proportions of the solids of the three components are:
Component 1 - about 1% to about 40%;
Component 2 – 0 to about 40%; and
Component 3 – about 5% to about 60%.

32. (New) The method of claim 26 wherein the admixture is added at a rate of from about 0.2% to about 2% by weight solids of cement.